11.0 CONSERVATION RECOMMENDATIONS

Section 11 discusses NMFS' obligation to develop conservation recommendations under Section 7 (a)(1) of the ESA, which directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and listed species. Conservation recommendations are discretionary measures suggested to minimize or avoid the potential adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, to develop additional information, or to assist the Federal agencies in complying with the obligations under Section 7(a)(1) of the ESA. NMFS believes that the following conservation recommendations are consistent with these obligations and, therefore, supports their implementation by the Action Agencies.

11.1 CREATE SPAWNING HABITAT FOR LCR CHINOOK SALMON IN IVES ISLAND AREA BELOW BONNEVILLE DAM

As described in Section 6, the Action Agencies can augment lower Columbia River flows with upper basin reservoir storage to create spawning habitat for tule chinook salmon in the Ives Island area. Starting the flow augmentation program described in Section 9.6.1.2.1 to benefit CR chum salmon approximately 4 weeks earlier will give LCR fall chinook salmon access to this habitat. However, NMFS is concerned about whether the hydrosystem can sustain this operation during a low or average water year without an adverse effect on the ability to meet flow objectives specified in Section 9.6.1.2.1. NMFS, therefore, recommends that the Action Agencies provide flow augmentation for access to spawning habitat in the Ives Island area as early as the first week in October, if the hydroregulation studies completed by mid-September indicate that the operation will not add significant risk to operations designed to meet spawning and incubation requirements for chum salmon or spring and summer flow objectives for juvenile migrants.

11.2 EVALUATE EFFECTS OF FCRPS OPERATIONS ON INFECTIOUS DISEASE TRANSMISSION

The Corps should evaluate the cumulative effects of delay and temperature on the transmission occurrence and level of infectious diseases. Adult passage delay has been documented at FCRPS hydro projects, but effects of cumulative delay passing the FCRPS hydrosystem (including increased exposure to elevated temperatures) have not been adequately addressed.

11.3 DEVELOP ANESTHETIC THAT WILL MEET FDA REQUIREMENTS

The Corps should identify and develop an anesthetic appropriate for use on salmonids in mainstem trapping facilities and other locations, and should seek Food and Drug Administration (FDA) and any other necessary approvals for its use. The anesthetic must meet a number of criteria, including ease of use (when large numbers of fish must be handled) and low immediate

and delayed handling mortality. In addition, any fish released back into the river must be safe for consumption by fishers who may catch those fish after they are trapped.

Trapping and sampling components of each run of adult salmonids at mainstem locations is a fundamental requirement for monitoring ESU status, run performance, and effectiveness of hydrosystem operations. Trapping facilities are also important for reducing the straying of hatchery fish into natural production areas. Handling large numbers of fish during trapping operations requires using an anesthetic to calm the fish, thereby reducing injuries and mortalities. Anesthetics currently used in the Columbia River basin include MS-222 (tricaine methanesulfonate or ethyl m-aminobenzoate sulphonate), clove oil, and carbon dioxide. Each substance is considered effective for anesthetic use, but each also has drawbacks. For example, carbon dioxide can result in increased injuries due to thrashing of the fish during recovery, particularly as water temperatures increase. MS-222 has not been approved for use in fish that may be consumed within 21 days of use. Therefore, it is critical to evaluate all potential anesthetics and to identify and adopt the most effective substance, based on minimizing injuries and lasting effects on salmonid survival and eliminating health risks to consumers. The anesthetic finally adopted may already be one in use, but with possible modifications to existing methods. It is also possible that different substances may be found effective for different objectives or under different conditions.

11.4 EVALUATE EFFECTS OF SHAD

The Corps should evaluate the effects of large numbers of shad in fish ladders on adult salmon migratory behavior, timing, and passage. Delay and accumulations of shad in fish ladders may contribute to delay of adult salmonids migrating through the FCRPS hydrosystem.

The Corps and BPA should also evaluate the effects large numbers of juvenile shad may have on the food base for juvenile salmon.

For NMFS to be kept informed of actions to minimize or avoid adverse effects or to benefit listed species or their habitats, NMFS requests notification of the implementation of any conservation recommendation.

11.5 EVALUATE MOVING LOWER COLUMBIA RIVER FLOW MEASUREMENT LOCATION

The Action Agencies, in coordination with NMFS, will evaluate the hydrologic effects of moving the lower Columbia River flow measurement location from McNary Dam to Bonneville or The Dalles Dams. To do so, the parties will develop new flow objectives for those sites.

The present flow objectives were developed using available fish survival data at various locations in the basin. McNary Dam was selected as a flow measurement location because 1)

data were available to define a flow objective, 2) it is located downstream of the confluence of the Snake and Columbia rivers, and 3) little active storage is provided by downstream FCRPS projects. Changing the flow objective to The Dalles or Bonneville Dam would include the streamflow depletion effects of BOR's projects located downstream of McNary Dam, as well as other water diversions from the lower Columbia River.

11.6 IMPROVE RUNOFF VOLUME FORECASTING

The Action Agencies will provide funding for improved runoff forecasts in storage reservoir basins. To improve forecasts may involve supporting such measures as improved forecasting methodologies, low elevation snowpack estimation by plane, addition of snow telemetry sites, improved maintenance and reliability of snow telemetry sites, and additional snow monitoring sites.

Accurate runoff forecasts are extremely important in managing Columbia Basin runoff for multipurpose uses such as electrical energy, flood control, and listed and unlisted fish species. Forecasting errors can cause too much water to be drafted for flood control, resulting in shortfalls of water for listed species and reservoir refill failures. The Libby basin is a site where runoff forecasting has to be improved. Water in that basin is needed to protect and enhance three listed species: salmon, bulltrout, and sturgeon. The average April-through-August runoff volume from 1960 to 1989 has been 6.4 Maf; the average forecast error has been 1.5 Maf, or 23.4%. In 2000, forecasts indicated that water would be available for sturgeon, bulltrout, and salmon. Libby Reservoir did not fill enough to provide any salmon augmentation water, however.

11.7 EXPLORE CHANGES IN KOOTENAY LAKE OPERATING RANGE WITH CANADIAN ENTITIES

The Corps, in coordination with USFWS and NMFS, will explore the opportunity to change Kootenay Lake regulation to increase its benefit to listed salmon and sturgeon. Increasing the operating range of Kootenay Lake, particularly the upper limit, would allow additional spring water storage and summer delivery that, by augmenting summer flows, would benefit listed salmon downstream. USFWS has also requested such changes in Kootenay Lake operations to improve sturgeon spawning in the Kootenai River downstream of Libby Dam.

11.8 PARTICIPATE IN DEVELOPING MAINSTEM TMDLS

The Action Agencies will participate in developing the Columbia-Snake River mainstem TMDLs for TDG and water temperature. The Action Agencies will also participate in the collaborative process of developing the implementation plan resulting from the TMDLs.

The Columbia-Snake River mainstem TMDLs are being developed by EPA and the states of Oregon, Washington, and Idaho under court order. The TMDLs will establish load allocations

for TDG and temperature for the mainstem Snake River from RM 188 to its confluence with the Columbia River and for the mainstem Columbia River from the Canadian Border to the Astoria Bridge. The water quality plan (Appendix B) presents a conceptual strategy for the TMDL implementation plan. The plan should enable future decisions on study results from RPAs identified in the biological opinion (Appendix B, Table B-2) and should also help determine future decisions on studies identified as conservation measures (Appendix B, Table B-3).

The TMDL provides a useful tool under the CWA for developing a strategy to move toward attaining water quality standards. Participation by the Action Agencies with the states, EPA, the Tribes, and other Federal agencies and private entities in monitoring, modeling, data analysis, and action-item selection will yield a more coordinated and collaborative plan for moving toward standard attainment. Coordination with tributary TMDL and water quality standard attainment efforts will also benefit mainstem water quality efforts (conservation recommendation 11.11).

11.9 CONDUCT LONG-TERM GAS-ABATEMENT ALTERNATIVE STUDY

The Action Agencies should continue to conduct a long-term gas-abatement alternative selection study for the following FCRPS projects: Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, Bonneville, and Grand Coulee dams. The study would be a follow-up evaluation of long-term structural gas-abatement alternatives based on the results of 1) the Corps' systemwide gas-abatement study due to be completed in spring 2001 and 2) the BOR's recently completed feasibility study of gas abatement alternatives at Grand Coulee Dam.

11.10 SUPPORT FEDERAL HABITAT TEAM

To ensure that Federal support for non-Federal habitat initiatives is effective, clear, regular, and predictable across Federal and non-Federal lands, lines of coordination will be needed among Federal agencies and between Federal and non-Federal entities. In the basinwide strategy, the Federal agencies propose to ensure coordination through a Federal Habitat Team.

The Action Agencies should enter into a memorandum of understanding with other Federal habitat agencies establishing a Federal Habitat Team to coordinate Federal activities across Federal and non-Federal lands. During the team's first year, BPA will provide a coordinator and administrative support. Thereafter, the Action Agencies should develop an agreement with other agencies participating on the team to share funding, staff, and administrative support.

11.11 PROVIDE FUNDING TO DEVELOP TMDLS

BPA should strongly consider providing funds to states, Tribes, and/or approved local planning entities that are prepared to develop TMDLs at the watershed level as part of implementing a completed subbasin plan.

Section 9.6.2 of this document and Section 3 of the basinwide strategy cite the importance of water quality to ensuring properly functioning conditions within tributary spawning and rearing habitat. They also name water quality compliance as a key objective in meeting the biological needs of listed salmonids. While water quality compliance is a delegated state responsibility under the CWA, these processes complement, and in some cases can facilitate, accomplishing ESA goals.

In cases where states, Tribes, and/or local planning entities are prepared to embrace TMDLs as mechanisms for achieving recovery of listed species, and in particular when no other funding sources are available, BPA should consider providing funds to assist in their development. Planning and developing TMDLs are necessary prerequisites to implementing legally sanctioned water quality improvements likely to result in biological benefits for listed species. NMFS can foresee situations in which TMDLs may be the appropriate remedies for addressing the biological needs of salmon and steelhead, but in which resources are insufficient to support participation by the affected parties. In those cases, BPA can play a beneficial role on behalf of the resource.

11.12 PROVIDE ALTERNATIVE FISHING LOCATIONS

Working through regional priority processes and in collaboration with state, Tribal, and Federal fishery managers, the Action Agencies will contribute to the identification, development, and establishment of alternative terminal fishing opportunities.

Fishery opportunities can be recreated, expanded, and/or improved in known-stock terminal areas where abundant fish can be harvested with minimal impacts on listed fish, provided the brood stock is appropriate to the area and/or unwanted straying is minimal. Those areas could potentially reduce fishing pressures in existing mixed stock areas, particularly for Tribal fisheries that are already oriented toward terminal fishing. This strategy will be effective for Tribal fisheries only to the extent that the affected Tribes are fully engaged in the planning process to ensure that usual and accustomed fishing areas, catch distribution, and other considerations receive appropriate respect.

11.13 PROVIDE FISHERY EFFORT REDUCTION PROGRAMS

Working through regional prioritization processes and in collaboration with state, Tribal, and Federal fishery managers, the Action Agencies will help develop and implement effective fishery effort reduction programs. The programs will be designed to add value to the catch in commercial fisheries in the basin by such means as price supports, value-added processing, and other strategies for mitigating the effects of harvest constraints necessitated by the status of natural populations.

Programs and strategies may include, but are not limited to, voluntarily buying out and retiring commercial fishing licenses and permits (particularly when catch reductions in harvest of listed

species are needed), purchasing harvest conservation easements to further reduce impacts on listed fish in commercial fisheries, and identifying economic development strategies designed to enhance fishery values, even in the face of smaller catches. Innovative strategies might include the price supports and value-added measures mentioned above, or other strategies that enhance fishery values.